

SECTION

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**Quality of care in the  
Medicare program**

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**Chart 5-1. SNFs improved on some measures but not others from 2011 to 2016**

Measure	2011	2013	2015	2016
Discharged to the community	33.2%	37.5%	38.7%	39.5%
Potentially avoidable readmissions				
During SNF stay	12.4	11.1	10.4	10.8
During 30 days after discharge from SNF	5.9	5.5	5.0	5.8
Rate of improvement in one or more mobility ADLs	43.6	43.8	43.6	43.6
Rate of no decline in mobility	87.2	87.2	87.1	87.1

Note: SNF (skilled nursing facility), ADL (activity of daily living). High rates of discharge to the community indicate better quality. High readmission rates indicate worse quality. All rates were risk adjusted. The rate of improvement in mobility ADLs is the average of the rates of improvement in bed mobility, transfer, and ambulation, weighted by the number of stays included in each measure. Stays with improvement in one, two, or three mobility ADLs are counted in the improvement measures. "Rate of no decline in mobility" is the share of stays with no decline in any of the three ADLs. Rates are the average of facility rates and calculated for all facilities with 25 or more stays, except the rate of potentially avoidable readmission during the 30 days after discharge, which is reported for all facilities with 20 or more stays. Measures exclude hospital-based swing-bed units.

Source: MedPAC analysis of Medicare claims and Minimum Data Set data for 2011–2016.

- Rates of risk-adjusted community discharge and potentially avoidable readmission during the SNF stay improved between 2011 and 2016. A greater share of beneficiaries was discharged to the community (39.5 percent compared with 33.2 percent). A lesser share of beneficiaries was readmitted to an acute care hospital during the SNF stay (10.8 percent compared with 12.4 percent). The share of beneficiaries readmitted to an acute care hospital in the 30 days after discharge increased between 2015 and 2016, putting the rate only slightly below that in 2011.
- Both readmission rates include only patients readmitted to a hospital with the principal diagnosis of a potentially avoidable condition. The 13 potentially avoidable conditions are congestive heart failure, electrolyte imbalance/dehydration, respiratory infection, sepsis, urinary tract or kidney infection, hypoglycemia or diabetic complications, anticoagulant complications, fractures and musculoskeletal injuries, acute delirium, adverse drug reactions, cellulitis/wound infections, pressure ulcers, and abnormal blood pressure.
- The two risk-adjusted measures of change in functional status were essentially unchanged between 2011 and 2016. The mobility measures are composites of the patients' abilities in bed mobility, transfer, and ambulation, and they reflect the likelihood that a patient will change, given his or her functional ability at admission. A facility admitting patients with worse prognoses will have a lower expected rate of achieving these outcomes, and this difference will be reflected in the risk-adjusted rates. The rate of improvement in mobility shows the share of stays with improvement in one, two, or three ADLs. The rate of no decline in mobility is the share of stays with no decline in any of the three ADLs.

**Chart 5-2. Home health agencies' performance on quality measures from 2013 to 2016**

Measure	2013	2014	2015	2016
Average share of an agency's beneficiaries who:				
Used emergency department care	11.7%	11.8%	12.2%	12.2%
Had to be admitted to the hospital	15.6	15.2	15.5	16.2
Average share of a home health agency's beneficiaries with improvements in:				
Walking	58	58	63	69
Transferring	53	53	59	65

Note: All data are fee-for-service beneficiaries only and are risk adjusted for differences in patient condition among home health patients.

Source: MedPAC analysis of Outcome and Assessment Information Set data compiled by the University of Colorado.

- The share of beneficiaries using emergency department care or being admitted to the hospital increased slightly from 2013 to 2016. The share of beneficiaries receiving emergency care did not change from 2015 to 2016. The average risk-adjusted rate of hospitalization for home health stays increased slightly from 15.5 percent in 2015 to 16.2 percent in 2016.
- Medicare publishes risk-adjusted home health quality measures that track changes in the functional abilities of patients who receive home health care. These measures do not include home health episodes that end with a hospitalization. The scores for these measures increased in 2016.
- Medicare implemented a value-based purchasing program for home health agencies in nine states in 2018. Agencies in these states will receive bonuses or penalties of up to 3 percent depending on their performance on 20 measures, including the functional and emergency department use measures listed above.

**Chart 5-3. IRFs improved on risk-adjusted rates of discharge to the community and potentially avoidable rehospitalizations from 2012 to 2016**

Measure	2012	2013	2014	2015	2016
Potentially avoidable rehospitalizations during IRF stay	2.6%	2.5%	2.5%	2.4%	2.5%
Potentially avoidable rehospitalizations during 30 days after discharge from IRF	4.6	4.5	4.4	4.1	4.4
Discharged to the community	75.3	75.9	76.2	76.0	76.9
Discharged to a SNF	6.7	6.7	6.9	6.8	6.7

Note: IRF (inpatient rehabilitation facility), SNF (skilled nursing facility). High rates of rehospitalization and discharge to a SNF indicate worse quality. High rates of discharge to the community indicate better quality. Rates are the average of the facility rates and are calculated for all facilities with 25 or more stays.

Source: Analysis of Inpatient Rehabilitation Facility–Patient Assessment Instruments from CMS.

- Between 2012 and 2016, the national average rate of risk-adjusted potentially avoidable rehospitalizations during IRF stays declined from 2.6 percent to 2.5 percent. (Lower rates are better.) A similar pattern was observed in the rate of risk-adjusted potentially avoidable rehospitalizations within 30 days after discharge from an IRF: The national average declined between 2012 and 2016 from 4.6 percent to 4.4 percent.
- The rehospitalization rates count only stays readmitted to a hospital with the principal diagnosis of a potentially avoidable condition. The potentially avoidable rehospitalizations we measure are respiratory-related illness (pneumonia, influenza, bronchitis, chronic obstructive pulmonary disease, and asthma); sepsis; congestive heart failure; fractures or fall with a major injury; urinary tract or kidney infection; blood pressure management; electrolyte imbalance; anticoagulant therapy complications; diabetes-related complications; cellulitis or wound infection; pressure ulcer; medication error or adverse drug reaction; and delirium.
- Between 2012 and 2016, the national average for the risk-adjusted community discharge rate increased from 75.3 percent to 76.9 percent. (Higher rates are better). Our measure of community discharge does not give IRFs credit for discharging a Medicare beneficiary to the community if the beneficiary is subsequently readmitted to an acute care hospital within 30 days of the IRF discharge. The national risk-adjusted rate of discharge to a SNF was essentially unchanged.

**Chart 5-4. Dialysis quality of care: Some measures show progress, others need improvement, 2011–2015**

Outcome measure	2011	2013	2015
Share of in-center hemodialysis patients:			
Receiving adequate dialysis	96%	97%	97%
Managing anemia*			
Mean hemoglobin <10 g/dL	14	24	26
Mean hemoglobin 10 to <12 g/dL	69	70	69
Mean hemoglobin ≥12 g/dL	16	5	5
Dialyzed with an AV fistula	59	62	63
Share of peritoneal dialysis patients:			
Receiving adequate dialysis	88	91	92
Managing anemia*			
Mean hemoglobin <10 g/dL	20	32	35
Mean hemoglobin 10 to <12 g/dL	65	62	60
Mean hemoglobin ≥12 g/dL	15	6	5
Share of all dialysis patients wait-listed for a kidney	18	18	16
Renal transplant rate per 100 dialysis-patient years	3.8	3.5	3.4
Annual mortality rate per 100 patient years*	17.8	16.7	16.6
Total hospital admissions per patient year*	1.9	1.8	1.7
Hospital days per patient year	12.5	11.6	11.4

Note: g/dL (grams per deciliter [of blood]), AV (arteriovenous). The rate per patient year is calculated by dividing the total number of events by the fraction of the year that patients were followed. Data on dialysis adequacy, anemia management, and fistula utilization represent the share of patients meeting CMS's clinical performance measures. The United States Renal Data System adjusts data by age, gender, race, and primary diagnosis of end-stage renal disease.  
\*Lower values suggest higher quality.

Source: Compiled by MedPAC with data from Fistula First, the United States Renal Data System, and institutional outpatient files from CMS.

- Quality of dialysis care is mixed. Performance has improved on some measures, but performance on others remains unchanged or has declined.
- All hemodialysis patients require vascular access—the site on the patient's body where blood is removed and returned during dialysis. Between 2011 and 2015, use of arteriovenous fistulas, considered the best type of vascular access, increased from 59 percent to 63 percent of hemodialysis patients. Between 2011 and 2015, overall adjusted mortality rates decreased by 6.8 percent (from 17.8 percent to 16.6 percent).
- Between 2011 and 2015, the proportion of hemodialysis patients receiving adequate dialysis remained high. Between 2011 and 2015, overall rates of hospitalization declined.
- Other measures suggest that improvements in dialysis quality are still needed. We looked at access to kidney transplantation because it is widely believed to be the best treatment option for individuals with end-stage renal disease. Between 2011 and 2015, the proportion of dialysis patients accepted on the kidney transplant waiting list remained low, and the renal transplant rate per 100 dialysis-patient years declined.

**Chart 5-5. Medicare Advantage HMO quality measures for 2016 show variation by enrollee characteristics**

Measures and beneficiary categories	Plans reporting by	
	Universe	Sampling
<b>Colorectal cancer screening</b>	<b>87%</b>	<b>75%</b>
Aged, not LI	88	77
Aged, LI	82	73
Under 65, not LI	82	71
Under 65, LI	76	69
<b>Eye exams for diabetics</b>	<b>85</b>	<b>76</b>
Aged, not LI	86	78
Aged, LI	86	78
Under 65, not LI	78	66
Under 65, LI	80	68
<b>Diabetics with poor control of blood sugar*</b>	<b>11</b>	<b>18</b>
Aged, not LI	9	15
Aged, LI	13	20
Under 65, not LI	19	24
Under 65, LI	22	30
<b>Medication reconciliation postdischarge</b>	<b>84</b>	<b>58</b>
Aged, not LI	85	61
Aged, LI	83	57
Under 65, not LI	77	54
Under 65, LI	84	46
<b>Controlling blood pressure</b>	<b>N/A</b>	<b>78</b>
Aged, not LI	--	80
Aged, LI	--	74
Under 65, not LI	--	75
Under 65, LI	--	68
<b>Breast cancer screening</b>	<b>79</b>	<b>N/A</b>
Aged, not LI	81	--
Aged, LI	74	--
Under 65, not LI	76	--
Under 65, LI	73	--
<b>Osteoporosis management*</b>	<b>48</b>	<b>N/A</b>
Not LI	51	--
LI	42	--

Note: HMO (health maintenance organization) LI (low income), N/A (not applicable). Reported results are for the 2016 "measurement year," or period of performance. See accompanying text for the difference between "universe" and "sampling" results. An enrollee is classified as low income if, for at least one month of the year, the person was receiving the Part D low-income subsidy or was dually eligible for Medicare and Medicaid. Beneficiaries under age 65 are entitled to Medicare on the basis of disability (including those entitled because they have end-stage renal disease). Data exclude cost-reimbursed plans, regional preferred provider organizations, private fee-for-service plans, Medicare–Medicaid demonstration plans, and plans in Puerto Rico (because of our inability to identify the low-income status of beneficiaries in the Commonwealth).

\*For the measure of diabetics with poor control of blood sugar, lower rates are better. Osteoporosis management measure applies to women ages 67 to 85 who suffered a fracture, so results are not presented for the under-65 population.

Source: MedPAC analysis of CMS Healthcare Effectiveness Data and Information Set® (HEDIS®) person-level data, denominator file, and common Medicare environment file.

*(Chart continued next pages)*

## **Chart 5-5. Medicare Advantage HMO quality measures for 2016 show variation by enrollee characteristics (continued)**

- The chart provides information on a set of HEDIS clinical quality measures that Medicare Advantage (MA) HMOs report to CMS. The seven measures listed are a subset of the measures CMS uses to calculate the plans' star ratings that determine MA quality bonus payments. The values reported in this chart are based on our analyses of enrollee-level HEDIS data rather than contract-level summary reporting used in past versions of this Data Book. As explained in the Commission's March 2018 report to the Congress, it is likely that contract-level values for some measures have become less representative of the actual performance across different geographic areas because of the extent of contract consolidations that result in contracts covering wide, noncontiguous geographic areas. Contract consolidations also prevent us from being able to report year-over-year changes for MA.
- HEDIS uses different reporting methods for certain measures, referred to in the chart as "universe" and "sampling." For the first four measures displayed in the chart, MA organizations can choose to report values for the universe of enrollees to whom a measure applies using administrative data (including information from electronic medical records) or they can opt to report values for a sampling of medical records (generally 411 records per MA contract). For the blood pressure control measure, all organizations must use medical record sampling. For the last two measures on the chart, all plans report on a universe basis.
- For plans reporting by universe, the chart shows the aggregate average share of enrollees across all such plans; the numerator for the measure is the total number, across all HMO plans, of enrollees receiving a screening (for example), divided by the total number of enrollees across all HMO plans who are eligible for the screening. For the sampling category, the chart shows the enrollment-weighted average of the rates for each contract for each of the population categories. Because samples are drawn at the contract level, we use the contract-level data for each population category as the weighting factor. Because of contract consolidations, and because values for the population groups shown in the chart are based on a subset of a sample in each contract, the results for sampling plans may not fully capture differences among plans in the quality of care for the subpopulations.
- When universe reporting is an option, our analysis found that only a small number of organizations report values for the universe of enrollees. For example, only 5 contracts report on a universe basis for the measure of diabetics with poor control of blood sugar, out of 302 HMO contracts reporting on the measure. However, universe-reporting plans tend to be large, so the five universe-reporting plans for this measure represented about 10 percent of MA HMO enrollment in 2016. Four of the five universe-reporting contracts have the maximum overall-quality star rating of five stars.

*(Chart continued next page)*

## **Chart 5-5. Medicare Advantage HMO quality measures for 2016 show variation by enrollee characteristics (continued)**

- Although the universe-reporting plans represent a smaller share of enrollees, we found that they tend to have better quality rates on all four of the measures where universe reporting is optional. For example, the average aggregate colorectal cancer screening rate for universe-reporting plans is 87 percent compared with 75 percent for sampling plans (a 12 percentage point difference). Medication reconciliation postdischarge is 84 percent for universe-reporting plans compared with 58 percent for sampling (a 26 percentage point difference).
- Our analysis found some large differences in results based on age. The under-65 population was less likely to receive colorectal cancer screening, eye exams for diabetic enrollees, postdischarge medication reconciliation, and breast cancer screening. Diabetic enrollees under 65 were much more likely to have poor control of blood sugar than aged diabetics. Poor rates of control were about 1.5 to about 2 times higher for the under-65 population regardless of income for both types of reporting plans.
- Large differences were observed in results by income status for some of the measures. For example, among low-income enrollees, the osteoporosis management rate was 42 percent compared with 51 percent for non-low-income enrollees (a difference of 9 percentage points). For the aged population, the rate for control of high blood pressure was 74 percent compared with 80 percent for non-low-income enrollees (a difference of 6 percentage points). For the controlling blood pressure measure, there was a difference of 7 percentage points in the under-65 population between low-income and non-low-income enrollees. For two measures, however—eye exams for diabetics and (for universe-reporting plans) medication reconciliation—results were better for those with low income among the under-65 enrollees.
- In determining star ratings, CMS makes an adjustment for measures for which there are systematic cross-contract and within-contract differences across population groups based on disability status and low-income status.

**Chart 5-6. Between 34 and 72 low-value services provided per 100 FFS beneficiaries in 2014; Medicare spent between \$2.4 billion and \$6.5 billion on these services**

Measure	Broader version of measure			Narrower version of measure		
	Count per 100 beneficiaries	Share of beneficiaries affected	Spending (millions)	Count per 100 beneficiaries	Share of beneficiaries affected	Spending (millions)
Imaging for nonspecific low back pain	12.0	8.9%	\$232	3.4	3.1%	\$66
PSA screening at age ≥75 years	9.0	6.2	79	5.1	4.2	44
Colon cancer screening for older adults	8.0	7.5	405	0.3	0.3	3
Spinal injection for low back pain	6.6	3.3	1,261	3.4	2.0	643
Carotid artery disease screening in asymptomatic adults	5.1	4.6	268	4.2	3.8	221
Preoperative chest radiography	4.6	4.1	67	1.1	1.1	17
PTH testing in early CKD	4.5	2.6	83	3.9	2.3	71
Stress testing for stable coronary disease	4.3	4.1	1,198	0.5	0.5	137
T3 level testing for patients with hypothyroidism	3.8	2.2	23	3.8	2.2	23
Head imaging for headache	3.6	3.3	242	2.4	2.2	160
Cervical cancer screening at age >65 years	2.2	2.2	44	1.9	1.9	39
Homocysteine testing in cardiovascular disease	1.5	1.2	12	0.4	0.3	3
Head imaging for syncope	1.2	1.1	78	0.8	0.7	51
Preoperative echocardiography	0.8	0.8	62	0.2	0.2	19
Preoperative stress testing	0.6	0.6	177	0.2	0.2	60
Screening for carotid artery disease for syncope	0.6	0.6	33	0.4	0.4	23
CT for rhinosinusitis	0.6	0.5	39	0.2	0.2	17
Vitamin D testing in absence of hypercalcemia or decreased kidney function	0.5	0.4	8	0.5	0.4	8
Imaging for plantar fasciitis	0.5	0.4	9	0.4	0.3	6
BMD testing at frequent intervals	0.4	0.4	9	0.3	0.3	6
Cancer screening for patients with CKD on dialysis	0.4	0.3	9	0.1	0.1	1
PCI/stenting for stable coronary disease	0.3	0.3	1,284	0.1	0.1	216
Arthroscopic surgery for knee osteoarthritis	0.2	0.2	204	0.1	0.1	108
Vertebroplasty	0.2	0.2	338	0.2	0.2	327
Preoperative PFT	0.2	0.2	2	0.1	0.1	1
Hypercoagulability testing after DVT	0.2	0.1	5	0.1	0.1	2
IVC filter placement	0.1	0.1	33	0.1	0.1	33
Carotid endarterectomy for asymptomatic patients	0.1	0.1	165	0.03	0.03	66
EEG for headache	0.1	0.1	4	0.04	0.04	2
Renal artery stenting	0.1	0.1	152	0.02	0.02	51
Pulmonary artery catheterization in ICU	0.01	0.01	0.2	0.01	0.01	0.2
<b>Total</b>	<b>72.2</b>	<b>37.4</b>	<b>6,526</b>	<b>34.2</b>	<b>22.5</b>	<b>2,425</b>

(Chart continued next page)

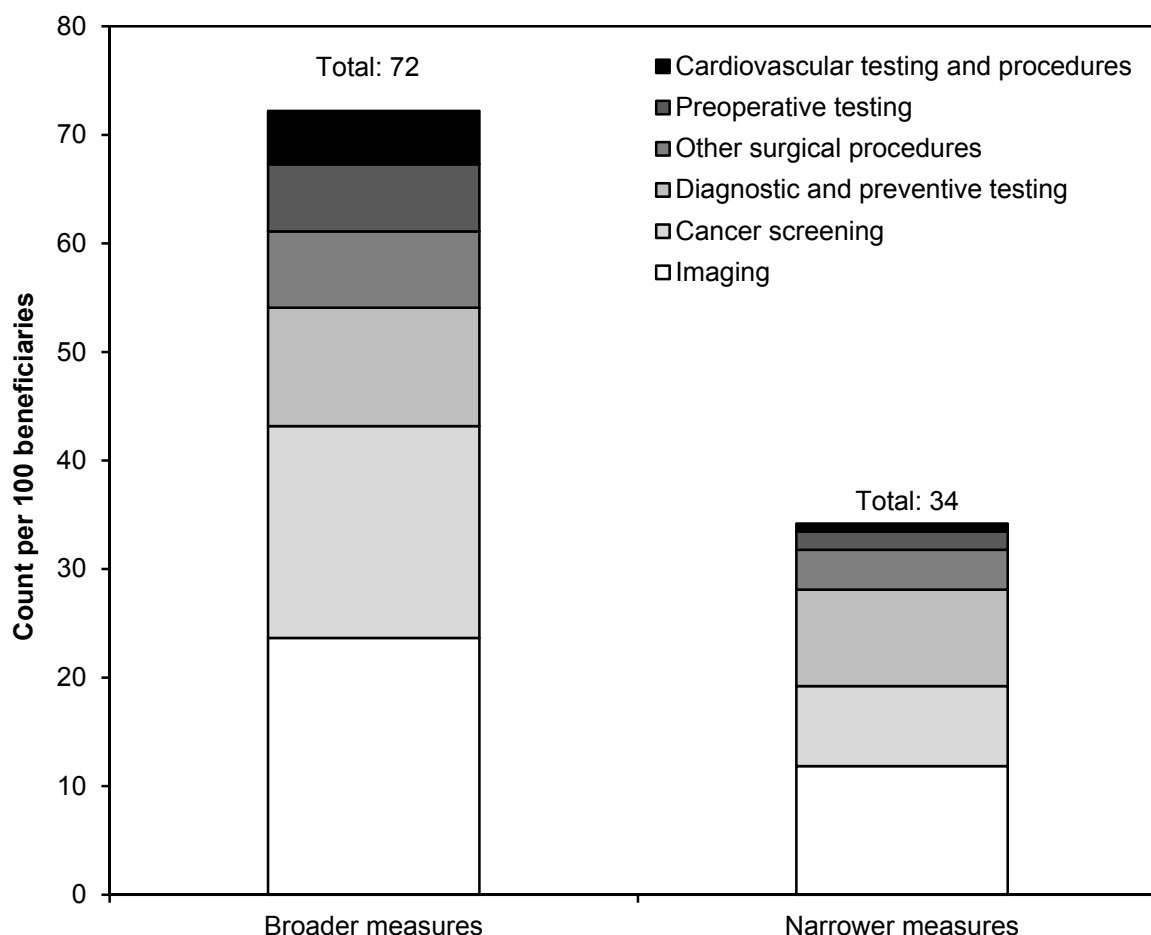
## **Chart 5-6. Between 34 and 72 low-value services provided per 100 FFS beneficiaries in 2014; Medicare spent between \$2.4 billion and \$6.5 billion on these services (continued)**

Note: FFS (fee-for-service), PSA (prostate-specific antigen), PTH (parathyroid hormone), CKD (chronic kidney disease), CT (computed tomography), BMD (bone mineral density), PCI (percutaneous coronary intervention), PFT (pulmonary function test), DVT (deep vein thrombosis), IVC (inferior vena cava), EEG (electroencephalography), ICU (intensive care unit). "Count" refers to the number of unique services. Numbers may not sum to totals due to rounding. The total for share of beneficiaries affected does not equal the column sum because some beneficiaries received services covered by multiple measures. "Spending" includes Medicare Part A and Part B program spending and beneficiary cost sharing for services detected by measures of low-value care. Spending is based on a standardized price for each service from 2009 that was updated to 2014.

Source: MedPAC analysis of 100 percent of Medicare claims using measures developed by Schwartz and colleagues (Schwartz, A. L., B. E. Landon, A. G. Elshaug, et al. 2014. Measuring low-value care in Medicare. *JAMA Internal Medicine* 174: 1067–1076; Schwartz, A. L., M. E. Chernew, B. E. Landon, et al. 2015. Changes in low-value services in year 1 of the Medicare Pioneer Accountable Care Organization Program. *JAMA Internal Medicine* 175: 1815–1825).

- Low-value care is the provision of a service that has little or no clinical benefit or care in which the risk of harm from the service outweighs its potential benefit.
- The 31 measures of low-value care in this chart were developed by a team of researchers. The measures are drawn from evidence-based lists—such as Choosing Wisely—and the medical literature. We applied these measures to 100 percent of Medicare claims data from 2014. These 31 measures do not represent *all* instances of low-value care; the actual number (and corresponding spending) may be much higher.
- The researchers developed two versions of each measure: a broader version (more sensitive, less specific) and a narrower version (less sensitive, more specific). Increasing the sensitivity of a measure captures more potentially inappropriate use but is also more likely to misclassify some appropriate use as inappropriate. Increasing a measure's specificity leads to less misclassification of appropriate use as inappropriate, at the expense of potentially missing some instances of inappropriate use.
- Based on the broader versions of the measures, our analysis found about 72 instances of low-value care per 100 beneficiaries in 2014, and about 37 percent of beneficiaries received at least 1 low-value service. Medicare spending for these services was \$6.5 billion. Based on the narrower versions of the measures, our analysis showed about 34 instances of low-value care per 100 beneficiaries, and almost 23 percent of beneficiaries received at least 1 low-value service. Medicare spending for these services totaled about \$2.4 billion.

**Chart 5-7. Imaging and cancer screening accounted for most of the volume of low-value care in 2014**

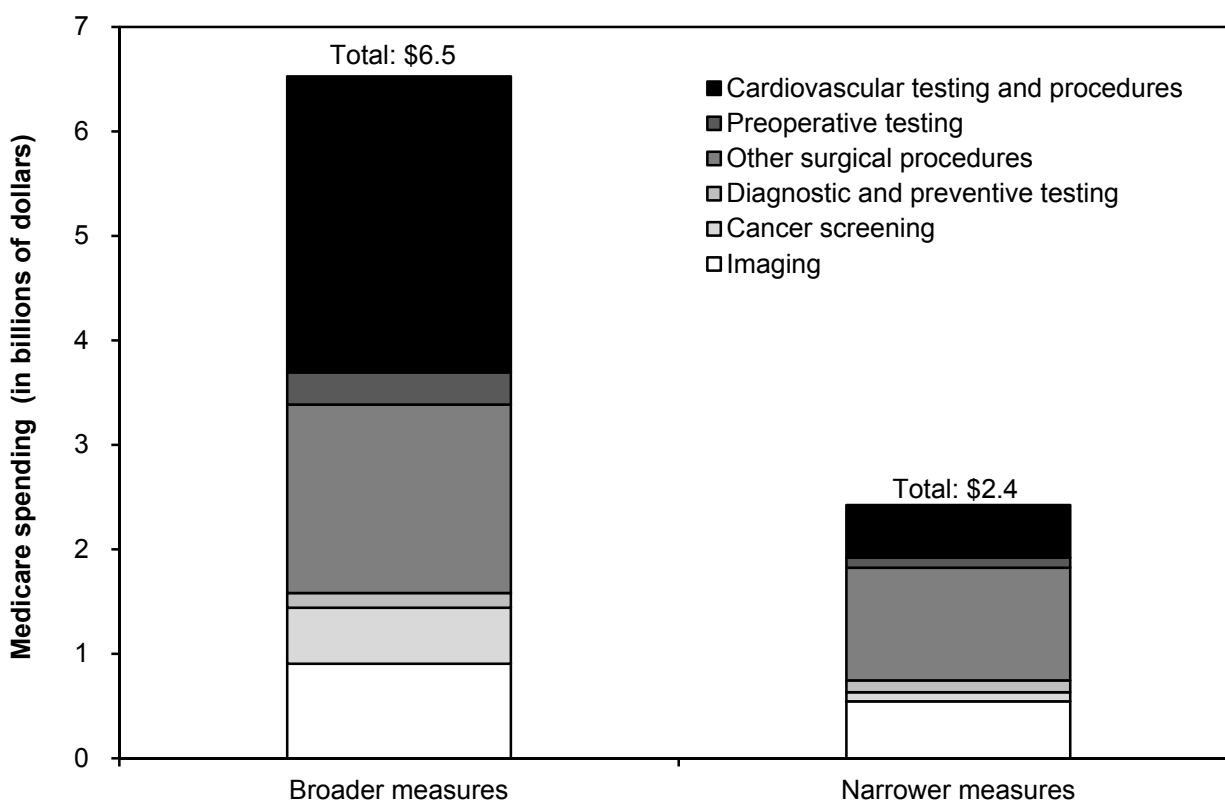


Note: FFS (fee-for-service). "Count" refers to the number of unique services provided to FFS Medicare beneficiaries.

Source: MedPAC analysis of 100 percent of Medicare claims using measures developed by Schwartz and colleagues (Schwartz, A. L., B. E. Landon, A. G. Elshaug, et al. 2014. Measuring low-value care in Medicare. *JAMA Internal Medicine* 174: 1067–1076; Schwartz, A. L., M. E. Chernew, B. E. Landon, et al. 2015. Changes in low-value services in year 1 of the Medicare Pioneer Accountable Care Organization Program. *JAMA Internal Medicine* 175: 1815–1825).

- We assigned each of the 31 measures of low-value care from Chart 5-6 to 1 of 6 clinical categories.
- Imaging and cancer screening accounted for 60 percent of the volume of low-value care per 100 beneficiaries among the broader versions of the measures. The "imaging" category includes back imaging for patients with nonspecific low back pain and screening for carotid artery disease in asymptomatic adults. The cancer screening category includes prostate-specific antigen testing for men ages 75 or older and colorectal cancer screening for older adults.
- Among the narrower versions of the measures, imaging and diagnostic and preventive testing accounted for 61 percent of the volume of low-value care per 100 beneficiaries.

**Chart 5-8. Cardiovascular testing and procedures, other surgical procedures, and imaging accounted for most of spending on low-value care in 2014**



Note: "Spending" includes Medicare Part A and Part B program spending and beneficiary cost sharing for services detected by measures of low-value care. To estimate spending, we used standardized prices to adjust for regional differences in payment rates. The standardized price is the median payment amount per service in 2009, adjusted for the increase in payment rates between 2009 and 2014. This method was developed by Schwartz et al. (2014).

Source: MedPAC analysis of 100 percent of Medicare claims using measures developed by Schwartz and colleagues (Schwartz, A. L., B. E. Landon, A. G. Elshaug, et al. 2014. Measuring low-value care in Medicare. *JAMA Internal Medicine* 174: 1067–1076; Schwartz, A. L., M. E. Chernew, B. E. Landon, et al. 2015. Changes in low-value services in year 1 of the Medicare Pioneer Accountable Care Organization Program. *JAMA Internal Medicine* 175: 1815–1825).

- Cardiovascular testing and procedures and other surgical procedures accounted for 71 percent of total spending on low-value care using the broader measures. Other surgical procedures and imaging made up two-thirds of spending on low-value care using the narrower measures.
- The "cardiovascular testing and procedures" category includes stress testing for stable coronary disease and percutaneous coronary intervention with balloon angioplasty or stent placement for stable coronary disease. The "other surgical procedures" category includes spinal injection for low back pain and arthroscopic surgery for knee osteoarthritis. The "imaging" category includes imaging for patients with nonspecific low back pain and carotid artery screening disease in asymptomatic adults.
- The spending estimates probably understate actual spending on low-value care because they do not include the cost of downstream services (e.g., follow-up tests and procedures) that may result from the initial low-value service. Also, we are not capturing *all* low-value care through these 31 measures.

